

REMARKS

Claims 86-98 have been examined and have been rejected. By this Amendment, Applicant has amended claims 92, 93 and 97, added new claims 99-101 and has canceled claims 88, 91 and 94 without prejudice or disclaimer. No new matter has been added.

I. Preliminary Matters

A. Requirement for Information

The Examiner has issued a requirement for information under 37 C.F.R. § 1.105. Specifically, the Examiner requires that Applicant disclose any change in the status of Japanese Application No. 2002-185874, and any change in the status of any foreign filed applications that claim priority from this Japanese application. The Examiner also requires that Applicant disclose any rejections made in Japanese Application No. 2002-185874, or in any foreign filed applications claiming priority therefrom. Applicant submits that there has been no change in the status of Japanese Application No. 2002-185874, or any foreign filed applications that claim priority from this Japanese application. Applicant further submits that no Office Action has been received for Japanese Application No. 2002-185874, or another foreign filed application that claims priority to Japanese Application No. 2002-185874.

B. Information Disclosure Statement

The Examiner alleges that the Information Disclosure Statement (IDS) filed September 20, 2007 fails to comply with 37 C.F.R. § 1.98(a)(1), because the references were listed in the remarks of the amendment filed September 20, 2007, and were not submitted in a separate paper.

The Examiner appears to be referring to the submission of the Abstract of Japanese Unexamined Patent Publication No. 1997-233422, which was submitted with the Amendment filed September 20, 2007 in response to the Examiner's Requirement for Information. The reference was previously submitted in the IDS of August 25, 2003. Therefore, Applicant respectfully requests the Examiner to acknowledge acceptance of the IDS filed September 20, 2007. Applicant also requests acknowledgment of the Japanese reference submitted on September 20, 2007.

C. Election/Restriction

The Examiner maintains that claims 95-97 correspond to the tenth embodiment shown in Figure 39. Therefore, the Examiner concludes that claim 89 is generic to embodiments 8-10, but is not generic to the remaining embodiments.

In the Amendment filed September 20, 2007, Applicant submitted that claim 1 recites a method step of "estimating a correspondent relationship between a pixel within said second patch on said other frame and a pixel within said reference patch on said reference frame, based on said second patch after the movement and/or deformation and on said reference patch." Applicant further submitted that the "similarity computation means" of claim 89, which computes the similarity between a desired frame and at least one frame which is temporally before or after said desired frame, is sufficiently broad to be generic to claim 1. Specifically, the method step of estimating a correspondent relationship between pixels in two frames, as described in claim 1, is just one example of computing the similarity between a desired frame and at least one other frame, as described in claim 89. Since all of the other claims in each of

species I through X contain a feature similar to that of claim 1, Applicant submitted that claim 89 is generic to each of the species I through X.

The Examiner does not appear to address the above argument in the present Office Action. Rather, the Examiner states that claim 89 is not generic to embodiments other than embodiments 8-10 for the reasons given in the previous Office Action, which state that claims 1-85 do not contain the feature "similarity computation means for computing a similarity between said desired frame and at least one frame which is temporally before and after said desired frame." The Examiner further contends that claim 89 is not generic because the embodiments have been described separately in the specification, because the withdrawn species have not been alleged to be obvious variations of the elected species, because the withdrawn claims are not dependent from claim 89 and allegedly fail to further limit claim 89, and because Applicant filed six applications in Japan.

Applicant respectfully submits that none of the above factors negate the fact that claim 89 is sufficiently generic such that it may read on each embodiment. "In general, a generic claim should require no material element additional to those required by the species claims, and each of the species claims must require all the limitations of the generic claim." MPEP § 806.04(d). Claim 89 generally recites:

An image processor for acquiring a processed frame by performing image processing on a desired frame sampled from a video image, said image processor comprising:

similarity computation means for computing a similarity between said desired frame and at least one frame which is temporally before or after said desired frame; and

synthesis means for obtaining a weighting coefficient whose value increases or decreases in correspondence to a reference level of the similarity, then weighting said at least one frame with said weighting coefficient, and synthesizing said weighted frame and said desired frame into said processed frame.

Claim 1 recites, *inter alia*:

...computing a correlation value that represents a correlation between the image within the patch of said coordinate-transformed frame and the image within said reference patch of said reference frame;

acquiring a weighting coefficient that makes a weight of said first interpolated frame greater as said correlation becomes greater, when synthesizing said first interpolated frame and second interpolated frame, based on said correlation value; and

acquiring a synthesized frame by weighting and synthesizing said first and second interpolated frames, based on said weighting coefficient.

In comparing claims 1 and 89, the similarity computation means for computing a similarity between said desired frame and at least one frame which is temporally before or after said desired frame of claim 89 corresponds generally to the computing a correlation value step of claim 1. The synthesis means for obtaining a weighting coefficient whose value increases or decreases in correspondence to a reference level of the similarity of claim 89 corresponds to the acquiring a weighting coefficient that makes a weight of said first interpolated frame greater as said correlation becomes greater of claim 1. The weighting said at least one frame with said

weighting coefficient, and synthesizing said weighted frame and said desired frame into said processed frame of claim 89 corresponds to the acquiring a synthesized frame by weighting and synthesizing said first and second interpolated frames, based on said weighting coefficient of claim 1. In other words, claim 89 does not require a material element additional to those required by claim 1, and claim 1 requires all the limitations of claim 89. Further, Applicant submits that claims 2-30 contain features similar to those of claim 1. Accordingly, Applicant submits that claim 89 is generic to each of claims 2-30. Applicant chooses not to traverse the Examiner's contention with respect to claims 31-85 at this time.

D. Objection to the Specification

The Examiner has objected to the title of the invention for allegedly not being descriptive. Applicant has amended the title in a manner believed to overcome the objection.

The Examiner further objects to the Amendment filed September 20, 2007 for allegedly introducing new matter into the disclosure. Specifically, the Examiner maintains that the feature "whose value increases or decreases in correspondence to a reference level of the similarity" is new matter. Applicant respectfully traverses the objection as follows.

As discussed below with respect to the rejection under 35 U.S.C. § 112, first paragraph, Applicant submits that the above-cited claim feature does not constitute new matter, and has written description support in the specification for the reasons set forth below.

Accordingly, Applicant submits that the objection should be withdrawn for the foregoing reason, and for the reasons submitted below with regard to the rejection under 35 U.S.C. § 112, first paragraph, which identifies proper support for the claims.

II. Claim Rejection under 35 U.S.C. § 112, First Paragraph

Claims 86-98 have been rejected under 35 U.S.C. § 112, first paragraph for allegedly failing to comply with the written description requirement. As noted above, the Examiner specifically maintains that the feature “whose value increases or decreases in correspondence to a reference level of the similarity” is new matter. Applicant respectfully traverses the rejection as follows.

“To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.” MPEP § 2163. Moreover, “[t]he analysis of whether the specification complies with the written description requirement calls for the [E]xaminer to compare the scope of the claim with the scope of the description to determine whether [A]pplicant has demonstrated possession of the claimed invention.” MPEP § 2163.

In the instant case, the specification states, for example, that:

The similarity computation means 102 computes similarities $b_2, b_3 \dots b_n$ between one frame to be processed (e.g., frame Fr1) and other frames Fr2 ... FrN. Based on the similarities computed by the similarity computation means 102, the contributory degree computation means 103 computes contributory degrees (i.e., weighting coefficients) $\beta_1, \beta_2 \dots \beta_n$ that are employed in weighting the frames Fr2 ... FrN and adding the weighted frames to the frame Fr1. In accordance with the

contributory degrees $\beta_1, \beta_2 \dots \beta_n$, the synthesis means 104 weights the frames Fr2 ... FrN and adds the weighted frames to the frame Fr1 and acquires a processed frame FrG.

See Specification at page 126. Based on at least this portion of the specification, Applicant submits that the specification provides written description support for the above-cited claim feature. Specifically, the specification states that weighting coefficients are computed based on the similarities computed by the similarity computation means 102. This portion of the specification broadly defines the relationship of the weighting coefficients and computed similarities. The claim feature “weighting coefficients whose values increase or decrease in correspondence to a reference level of the similarity” is a more particular definition of the relationship between the claimed weighting coefficients and the claimed similarity, such that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention based at least on the above-cited portion of the specification.

Furthermore, the specification states that:

Thus, in the eighth embodiment, with respect to frames Fr2 and Fr3 temporally before and after frame Fr1, similarities b2 and b3 with frame Fr1 are computed, and if similarities b2 and b3 are great, contributory degrees (weighting coefficients) β_2 and β_3 are made greater.

See Specification at page 129. Applicant submits that this portion of the specification clearly provides written description support for the claim feature “whose value increases or decreases in correspondence to a reference level of the similarity.”

Accordingly, Applicant submits that the rejection of claims 86-98 under 35 U.S.C. § 112, first paragraph should be withdrawn at least for the foregoing reasons.

III. Claim Rejection under 35 U.S.C. § 112, Second Paragraph

Claims 87-88, 90-91, 93-94 and 98 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Since claims 88, 91 and 94 have been canceled without prejudice or disclaimer, Applicant submits that the rejection of such claims is now moot. Applicant maintains that consistent with the Examiner's remarks, the division of areas may be generally construed.

The Examiner further asserts that claim 98 is identical to claim 89. Specifically, the Examiner maintains that the phrase "at least one frame which is temporally before and one frame which is temporally after" still is only one frame as stated in the remainder of claim 98. Because the claim is described with a conjunctive term (and) rather than a disjunctive term (or), one skilled in the art would understand the implication of plural frames in the remaining claim recitation.

Accordingly, Applicant requests the Examiner to withdraw the rejection of claims 90, 93 and 98 under 35 U.S.C. § 112, second paragraph.

IV. Claim Rejection under 35 U.S.C. § 101

Claims 92-94 and 97 have been rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. Applicant has amended claims 92, 93 and 97 to overcome the rejection, as suggested by the Examiner.

V. Claim Rejection under 35 U.S.C. § 102(b) over Japanese Unexamined Patent Publication No. 2000-354244 to Nobutaka (“Nobutaka”)

Claims 86-98 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Nobutaka.

A. Claim 86

In the Amendment filed September 20, 2007, Applicant submitted that, as shown in equation 7 of Nobutaka (which corresponds to equation 7 of U.S. Patent No. 6,804,419), the weighting coefficient of Nobutaka does not “increase or decrease in correspondence to a reference level of the similarity,” as claimed in the instant application. Rather, the weighting coefficient of Nobutaka is used to calculate the similarity between blocks. Applicant further submitted that Nobutaka teaches that the similarity is used for calculating a motion vector, which is used for position matching to synthesize two frames. *See* Nobutaka at paragraphs [0056]-[0065]. This feature of Nobutaka fails to teach the claimed feature of “acquiring said processed frame by obtaining a weighting coefficient whose value increases or decreases in correspondence to a reference level of the similarity, then weighting said at least one frame with said weighting coefficient, and synthesizing said weighted frame and said desired frame.” In other words, Nobutaka teaches synthesizing two frames based on a motion vector, which is calculated from

the similarity, whereas the present invention uses the weighting coefficient to weight "said at least one frame...and synthesizing said weighted frame and said desired frame."

In the present Office Action, the Examiner maintains that since U.S. Patent No. 6,804,419 ("419 patent") was not cited as prior art, any arguments based on this patent have not been entered. The Examiner cannot legally ignore the facts introduced by the '419 patent. The '419 patent is the corresponding U.S. disclosure for the cited Japanese reference. Both the cited Japanese reference and the '419 patent are based on common application JP 9-9165941. In effect, U.S. '419 is the same disclosure as the cited Japanese reference. Further, the Examiner asserts that paragraphs 458, 466 and 480 of the published version of the instant application (U.S. Publ. No. 2004/0086193) state that the processed frame is obtained by multiplying interpolated frames that are temporally before and after the reference with contributory degrees, or weighting coefficients, having values that are made greater if the similarity is great. Therefore, the Examiner concludes that discussion of Nobutaka in paragraphs 458, 466 and 480 contradict the arguments made in the Amendment filed September 20, 2007.

Applicant respectfully traverses the rejection. Aside from the fact that the Japanese reference and the '419 patent are the same invention, Applicant submits that the arguments made in the Amendment filed September 20, 2007 should have been entered because they were based on the cited Nobutaka reference. In the Amendment of September 20, 2007, Applicant merely pointed out that equation 7 of Nobutaka corresponds to equation 7 of the '419 patent. Specifically, Applicant submitted:

On the other hand, equation 7 of Nobutaka, which corresponds to equation 7 found in col. 13, lines 9-26 of U.S. Patent No. 6,804,419, teaches that $W(u,v)$ denotes the weighting coefficient of component (u,v) , and $R(a,b)$ denotes the similarity of blocks A and B. As shown in equation 7 of the reference, the weighting coefficient of Nobutaka does not “increase or decrease in correspondence to a reference level of the similarity,” as claimed in the instant application. Rather, the weighting coefficient of the reference is used to calculate the similarity between blocks.

See Amendment filed September 20, 2007 at page 29. The above-cited portion clearly makes arguments based on the teachings of the cited Nobutaka reference, not the ‘419 patent. Accordingly, Applicant submits that the Examiner should have entered the arguments made in the previous Amendment. The Examiner must respond to the substance of the rejection. To the extent there is any ambiguity in the teaching of the cited Japanese reference, the ‘419 patent clears any ambiguities to Applicant’s favor.

Moreover, Applicant submits that the paragraphs 458, 466 and 480 of the present specification do not contradict the arguments submitted in the previous Amendment. For example, paragraph 458 recites:

...a processed frame FrG with higher resolution than frame Fr1 may be obtained by interpolating frames Fr2 and Fr3 multiplied by contributory degrees β_2 and β_3 in frame Fr1, like a method disclosed in Japanese Unexamined Patent Publication No. 2000-354244, for example.

As noted above, in the Amendment filed September 20, 2007, Applicant submitted that the weighting coefficient of Nobutaka is used to calculate the similarity between blocks, as opposed to the claimed feature that the weighting coefficient increases or decreases in

correspondence to a reference level of the similarity. Paragraph 458, as well as paragraphs 466 and 480, merely states that the processed frame may be obtained by interpolating frames Fr2 and Fr3 multiplied by contributory degrees β_2 and β_3 in frame Fr1. However, this portion of the present specification makes absolutely no reference to the relationship between the similarity and the weighting coefficient, much less directly contradicts the argument that Nobutaka fails to teach that the weighting coefficient increases or decreases in correspondence to a reference level of the similarity. Accordingly, Applicant reiterates the argument submitted in the previous Amendment that Nobutaka fails to teach or suggest that the weighting coefficient increases or decreases in correspondence to a reference level of the similarity.

B. Claims 87-98

Since claims 87-94 contain features similar to those discussed above with regard to claim 86, Applicant submits that such claims are patentable for at least similar reasons. Since claims 95, 96, 97 and 98 are dependent upon claims 87, 90, 93 and 89, respectively, Applicant submits that such claims are patentable at least by virtue of their dependency.

VI. Newly Added Claims

Applicant has added new claims 99-101. Since claims 99-101 are dependent upon claims 95-97, respectively, Applicant submits that such claims are patentable at least by virtue of their dependency.

VII. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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